

Tracking Environmental Health Information in Missouri

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Missouri's Reporting Rule

19 CSR 20-20.020 Reporting Communicable, Environmental and Occupational Diseases.

19 CSR 20-20.020 Reporting Communicable, Environmental and Occupational Diseases.

PURPOSE: This rule designates the diseases, disabilities, conditions and findings that must be reported to the local health authority or the Department of Health and Senior Services. It also establishes when they must be reported.

(1) Category I diseases or findings shall be reported to the local health authority or to the Department of Health and Senior Services within twenty-four (24) hours of first knowledge *or* ~~by~~ *by* telephone, facsimile or other rapid communication. Category I diseases or findings are--

(A) Diseases, findings or agents that occur naturally or from accidental exposure.

Animal (mammal) bite wound, humans
Diphtheria
Haemophilus influenzae disease
Hantavirus pulmonary syndrome
Hepatitis A
Hyperthermia
Hypothermia
Influenza, suspected -- nosocomial outbreaks and public or private school closures
Lead (blood) level greater than or equal to forty-five micrograms per deciliter
($>45 \mu\text{g/dl}$) in any person equal to or less than seventy-two (72) months of age
Measles (rubeola)
Meningococcal disease, invasive
Outbreaks or epidemics of any illness, disease or condition that may be of public health concern
Pertussis
Polio/myelitis
Rabies, animal or human
Rubella, including congenital syndrome
Staphylococcus, ~~vancomycin~~ resistant
Streptococcus pneumoniae in children less than five (5) years
Syphilis, including congenital syphilis
Tuberculosis disease
Typhoid fever

(B) Diseases, findings or agents that occur naturally or that might result from a terrorist attack involving biological, radiological, or chemical weapons:

Adult respiratory distress syndrome (ARDS) in patients under fifty (50) years of age
(without a contributing medical history)
Anthrax
Botulism
Brucellosis
Cholera
Encephalitis/meningitis, Venezuelan equine
Glanders
Hemorrhagic fever (e.g., dengue, yellow fever)
Plague
Q fever
Ricin
Smallpox (variola)
Staphylococcal enterotoxin B
T-2 mycotoxins
Tularemia

(C) Diseases, findings or adverse reactions that occur as a result of inoculation to prevent smallpox, including but not limited to the following:

Accidental administration
Accidental implantation (inadvertent autoinoculation)
Bacterial infection of site of inoculation
Congenital vaccinia
Contact vaccinia (i.e., vaccinia virus infection in a contact of a smallpox vaccinee)
Eczema vaccinatum
Erythema multiforme
Generalized vaccinia
Post-vaccinal encephalitis
Progressive vaccinia (vaccinia necrosum, vaccinia gangrenosa, disseminated vaccinia)
Vaccinia keratitis

(2) Category II diseases or findings shall be reported to the local health authority or the Department of Health and Senior Services within three (3) days of first knowledge *or* ~~by~~ *by* Category II diseases or findings are--

Acquired immunodeficiency syndrome (AIDS)
Arsenic poisoning
Blastomycosis
California serogroup viral encephalitis/meningitis
Campylobacter infections
Carbon monoxide poisoning
CD4+ T cell count
Chancroid
Chemical poisoning, acute, as defined in the most current ATSDR CERCLA
Priority List of Hazardous Substances; if terrorism is suspected, refer to subsection (1)(B)
Chlamydia trachomatis infections
Coccidioidomycosis
Creutzfeldt-Jakob disease
Cryptosporidiosis
Cyclosporidiosis
Eastern equine viral encephalitis/meningitis
Ehrlichiosis, human granulocytic, [or] monocytic, or other/unspecified agent
[Encephalitis, arthropod-borne [except VEE, see section (1)(B)]]
Delete this condition
Escherichia coli O157:H7
Escherichia coli O157:H7 positive, serogroup non-O157:H7
Giardiasis
Gonorrhea
Hansen disease (leprosy)
Heavy metal poisoning including, but not limited to, cadmium and mercury
Hemolytic uremic syndrome (HUS), post-diarthral
Hepatitis B, acute
Hepatitis B surface antigen (prenatal HBsAg) in pregnant women
Hepatitis C
Hepatitis non-A, non-B, non-C
Human immunodeficiency virus (HIV)-exposed newborn infant (i.e., newborn infant whose mother is infected with HIV)
Human immunodeficiency virus (HIV) infection, as indicated by HIV antibody testing (reactive screening test followed by a positive confirmatory test),
HIV antigen testing (reactive screening test followed by a positive confirmatory test), detection of HIV nucleic acid (RNA or DNA), HIV viral culture, or other testing that indicates HIV infection

Human immunodeficiency virus (HIV) test results (including both positive and negative results) for children less than two (2) years of age whose mothers are

infected with HIV *human immunodeficiency virus (HIV) test results (including detectable results)*

Human immunodeficiency virus (HIV) viral load measurement (including non-detectable results)

Influenza, laboratory-confirmed
Lead (blood) level less than forty-five micrograms per deciliter ($<45 \mu\text{g/dl}$) in any person equal to or less than seventy-two (72) months of age and any lead (blood)

level in persons older than seventy-two (>72) months of age
Legionellosis
Leptospirosis

Listeria monocytogenes

Lyme disease

Malaria

Methemoglobinemia

Mumps

Mycobacterial disease other than tuberculosis (MOTT)

Nosocomial outbreaks

Occupational lung diseases including silicosis, asbestosis, byssinosis, farmer's lung and

toxic organic dust syndrome

Pesticide poisoning

Powassan viral encephalitis/meningitis

Psittacosis

Respiratory diseases triggered by environmental contaminants including environmentally or occupationally induced asthma and bronchitis

Rocky Mountain spotted fever

Saint Louis viral encephalitis/meningitis

Salmonellosis

Shigellosis

Streptococcal disease, invasive, Group A

Streptococcus pneumoniae drug-resistant invasive disease

Tetanus

Toxic shock syndrome, staphylococcal or streptococcal

Trichinosis

Tuberculosis infection

Varicella deaths

West Nile fever

West Nile viral encephalitis/meningitis

Western equine viral encephalitis/meningitis

Yersinia enterocolitica

(3) The occurrence of an outbreak or epidemic of any illness, disease or condition which may be of public health concern, including any illness in a food handler that is potentially transmissible through food. This also includes public health threats that could result from terrorist activities such as clusters of unusual diseases or manifestations of illness and clusters of unexplained deaths. Such incidents shall be reported to the local health authority or the Department of Health and Senior Services by telephone, facsimile, or other rapid communication within twenty-four (24) hours of first knowledge or suspicion.

(4) A physician, physician's assistant, nurse, hospital, clinic, or other private or public institution providing diagnostic testing, screening or care to any person with any disease, condition or finding listed in sections (1)–(3) of this rule, or who is suspected of having any of these diseases, conditions or findings shall make a case report to the local health authority or the Department of Health and Senior Services, or cause a case report to be made by their designee, within the specified time.

(A) A physician, physician's assistant, or nurse providing care in an institution to any patient with any disease, condition or finding listed in sections (1)–(3) of this rule may authorize, in writing, the administrator or designee of the institution to submit case reports on patients attended by the physician, physician's assistant, or nurse at the institution. But under no other circumstances shall the physician, physician's assistant, or nurse be relieved of this reporting responsibility.

(B) Duplicate reporting of the same case by health care providers in the same institution is not required.

(5) A case report as required in section (4) of this rule shall include the patient's name, home address with zip code, date of birth, age, sex, race, home phone number, name of the disease, condition or finding diagnosed or suspected, the date of onset of the illness, name and address of the treating facility (if any) and the attending physician, any appropriate laboratory results, name and address of the reporter, treatment information for sexually transmitted diseases, and the date of report.

(A) A report of an outbreak or epidemic as required in section (3) of this rule shall include the diagnosis or principal symptoms, the approximate number of cases, the local health authority jurisdiction within which the cases occurred, the identity of any cases known to the reporter, and the name and address of the reporter.

(6) Any person in charge of a public or private school, summer camp or child or adult care facility shall report to the local health authority or the Department of Health and Senior Services the presence or suspected presence of any diseases or findings listed in sections (1)–(3) of this rule according to the specified time frames.

(7) All local health authorities shall forward to the Department of Health and Senior Services reports of all diseases or findings listed in sections (1)–(3) of this rule. All reports shall be forwarded within twenty-four (24) hours after being received, according to procedures established by the Department of Health and Senior Services director. Reports will be forwarded as expeditiously as possible if a terrorist event is suspected or confirmed. The local health authority shall retain from the original report any information necessary to carry out the required duties in 19 CSR 20-20.040(2) and (3).

(8) Information from patient medical records received by local public health agencies or the Department of Health and Senior Services in compliance with this rule is to be considered confidential records and not public records.

Missouri's Environmental Tracking Network

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graph BT; MOHSAIC[MOHSAIC] --> MENTN[Missouri's Environmental Tracking Network]; GIS[GIS] --> MENTN; Other[Other Agency Data] --> MENTN
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MOHSAIC:

- Environmental & health condition reports (MOHSIS)
- Health management data
- Assessments
- Laboratory and hospital data
- Birth – death information

GIS:

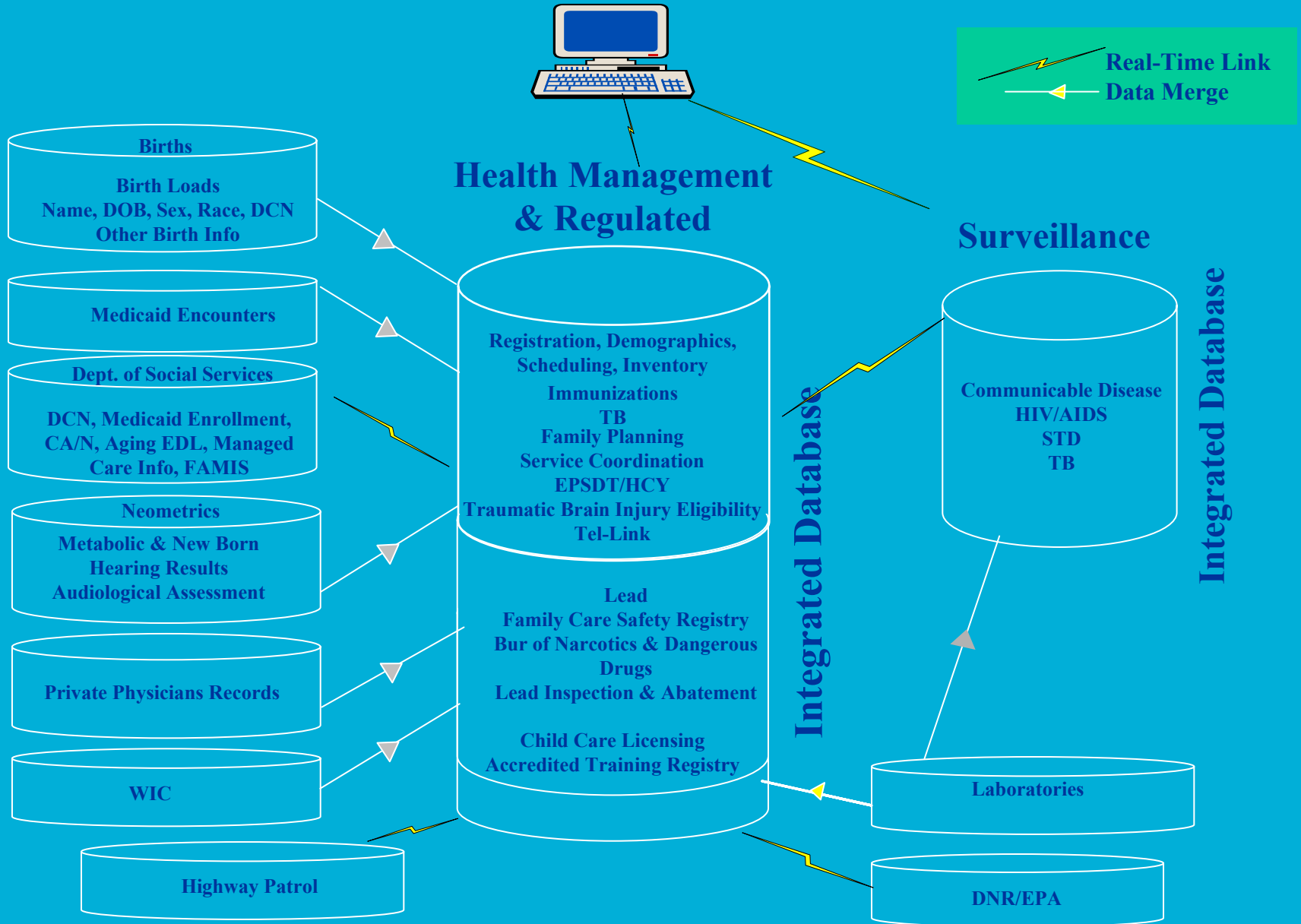
- Spatial display of environmental risk contributors
- Spatial distribution of health conditions
- Jurisdictions (legislative districts, city/county/state boundaries, etc.)

Other Agency Data:

- Internal health data not in MOHSAIC
- External environmental data (Natural Resources, Conservation, EPA, etc)

MOHSAIC

State-Wide Network or Web Access



MOHSIS

- Missouri Health Surveillance Information System
- Implemented in 1999 as part of DHSS' integrated MOHSAIC system
- Data model for this surveillance system shared with CDC and later formed the foundation for the NEDSS base system data model

MOHSIS Description

- Allows means to enter, store and retrieve epidemiological information of interest to public health in a centralized database through the department's secure wide area network (WAN)
- Will replace current multiple systems used for surveillance
- Export of case specific data to CDC and other entities in a format consistent with national standards and/or local requirements

Description (cont.)

- MOHSIS has enhanced our ability to do statewide reporting of communicable diseases.
- All variables entered into MOHSIS are available in the Data Warehouse for analysis.

Current MOHSIS System

- Transactional component
 - Multiple names for single party
 - Multiple addresses for party
 - Multiple conditions for party
 - Multiple diagnostic tests, treatment and symptoms for condition
 - Association of contacts to condition
 - Notification Search for newly reported conditions
 - Download ability for DBF file from transactional side

Current MOHSIS System (continued)

- Data Warehouse
 - Standard Web Based Reports available for local health agencies.
 - Ad hoc reports using MyEureka Reportwriter, or by using MSQuery; retrieval of relational files that can be dropped into other analytical tools such as GIS, SAS, or EpiInfo.

FileAdministrationFindNotificationsHelp

Last Name

BUSCHJOST

First Name

THOMAS

Middle Name

J

6. Insurance/Medical Records

8. Narratives

9. Vaccinations

1. Demographics

2. Conditions

4. Locators

5. Occupation

Names

Last Name(first)	Last Name(second)	First Name	Middle Name(first)	Middle Name(second)	Type
BUSCHJOST		THOMAS	J		PRIMA
BUSCHJOST		TOM			A.K.A.

+ Add Name

Update Name

Demographics

Birth Date	Sex	Marital Status	Vital Status	Origin Country	Grade Level	Arrived In USA
10/25/1961	MALE			UNITED STATES		

TOM BUSCHJOST

DOB - 10/25/1961,

SEX - MALE,

RACE - BLACK + ASIAN + ETHNICITY - NON-HISPANIC

Update Demographics

View History

Close

Start

4:29 PM

MOHSIS - Case Inquiry/Update

File

Administration

Find

Notifications

Help

Last Name

BUSCHJOST

First Name

THOMAS

Middle Name

J

6. Insurance/Medical Records

8. Narratives

9. Vaccinations

1. Demographics

2. Conditions

4. Locators

5. Occupation

Condition ID	Condition Name	Age at Onset	Age Unit	Condition_Code	Condition_Status	Diagnosis Date
233196962	GIARDIASIS	40	YEARS	11570	CONFIRMED	6/24/2002
233199707	SALMONELLA INFECTION	40	YEARS	11000	CONFIRMED	6/14/2002

History

+ Add Condition

Update Case Report

Update Condition

Jurisdiction County

GREENE

Notifiers

Condition

Provider

Diagnostics

Address

Symptoms

Log

Risk Factors

Treatments

Resolutions

Contacts

Narratives

NETSS ID - 233199717

CASE ID - 233199707

CONDITION - SALMONELLA INFECTIONS

AGE AT ONSET - 40

STATUS - CONFIRMED

DIAGNOSIS DATE - 6/14/2002

EVENT - DIAGNOSIS = 6/14/2002

MORTALITY - NO

UPDATE SUPPLEMENTAL CASE FORM

(Select Below)

Record of Investigation of Enteric Illness

Update Supplemental Form

CDC REPORT INFORMATION

DATE TYPE- EVENT DATE

CONDITION DATE- 6/14/2002

REPORT WEEK-

REPORT MONTH-

REPORT YEAR-

TYPE DESC- DIAGNOSIS

DATE TEXT-

Update CDC Date Info

Close

Start

MOHSIS 2

MOHSIS

Microsoft ...

Document...

4:36 PM

Health Management - Lead

- Client demographic data collected
- Multiple blood lead tests captured for client to show history of blood lead levels
- Multiple locators (addresses) for client can be captured to track exposure(s)
- Case management activities

Lead Prototype - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print

Address http://devont/prototypes/lead/client/Default.htm Go Links

Search

Ne

Choose a category for your search

F

F

F

F

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F

P

Find Web content

Bro... to yo... by MSN Search

Missouri Department of Health & Senior Services

MOHSAIC

HOME

LEAD

SERVICE COORDINATION

HEALTH MANAGEMENT

SURVEILLANCE

CLIENT

SITE

STUDIES

ACTION PLAN

WORKLOAD

Health and Senior Services

MISSOURI DEPARTMENT

USER: GOLDFINGER, AURIC

LOGOUT

AGENCY: JEFFERSON CITY CLINIC

CHANGE

SEARCH: ADVANCED

NAME

DCN

SSN

COLLAPSE ALL

SYNC TREE

GILMORE, ARTIS

ADDRESSES

12 MAIN STREET, JE

PREVIOUS RESID

OTHER RESIDENT

920 WILDWOOD, JE

TELEPHONES

MEDICAL TEST

12/12/2002

CAPILLARY

VENOUS

CLIENT GILMORE, ARTIS

IMMUNIZATIONS DUE

Client Demographics

Client Demographics displays information about the client. To update the client information click the update button. NOTE: Some information cannot be edited through this application and must be edited through Service Coordination and/or Health Management.

CLIENT INFORMATION

NAME

DCN

SSN

SEX

DATE OF BIRTH

DATE OF DEATH

LANGUAGE

GILMORE, ARTIS

6546546

586-94-5163

MALE

7/7/1977

ENGLISH

ETHNICITY

NON-HISPANIC

RACE

ASIAN

JAPAN

WHITE

Done Local intranet

Start

My D...

Group...

Mail ...

Lead...

8:25 AM

Client Demographics

INDICATES REQUIRED FIELDS.

Enter the demographic information of the client

Click Save to save the information and return to the inquiry screen.

Click Clear to return the inquiry screen without saving the information.

CLIENT INFORMATION

NAME

DCN

SSN

SEX

DATE OF BIRTH

DATE OF DEATH

Search

ETHNICITY

SELECT ETHNICITY

RACE

AT LEAST ONE

☐ ASIAN

☐ AMERICAN

☐ BLACK

Lead Prototype - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print View Source

Address http://devont/prototypes/lead/client/Default.htm Go Links

Search X

Ne >>

Choose a category for your search

Find Web content

Bring to you by MSN Search

Missouri Department of Health & Senior Services

MOHSAIC

Health and Senior Services

MISSOURI DEPARTMENT

HOME LEAD SERVICE COORDINATION HEALTH MANAGEMENT SURVEILLANCE

CLIENT SITE STUDIES ACTION PLAN WORKLOAD

USER: GOLDFINGER, AURIC LOGOUT

AGENCY: JEFFERSON CITY CLINIC CHANGE

SEARCH: ADVANCED

NAME DCN SSN

COLLAPSE ALL SYNC TREE

+ 12/8/2002

+ 12/7/2002

- 12/2/2002

VENOUS

CONTACTS

+ JOHNSON, MARY J

+ JOHNSON, TOM

+ SMITH, JOE

- JONES, TAMMY

+ ADDRESSES

+ TELEPHONES

Contact

CONTACT INFORMATION

NAME	JOHNSON, MARY J
RELATIONSHIP	MOTHER
MARITAL STATUS	MARRIED
RISK REASON	MEMBER OF HOUSEHOLD
LANGUAGE	ENGLISH

COMMENTS

HERE IS WHERE ALL THE COMMENTS WILL APPEAR FOR A CONTACT.

Update

Contact List

Local intranet

Start My... Gr... Ma... Le...

8:28 AM

Lead Prototype - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print View Source

Address http://devont/prototypes/lead/client/Default.htm Go Links

Search X

Ne >>

Choose a category for your search

Find Web content

Bring to you by MSN Search

Missouri Department of Health & Senior Services

MOHSAIC

Health and Senior Services

MISSOURI DEPARTMENT

HOME LEAD SERVICE COORDINATION HEALTH MANAGEMENT SURVEILLANCE

CLIENT SITE STUDIES ACTION PLAN WORKLOAD

USER: GOLDFINGER, AURIC LOGOUT

AGENCY: JEFFERSON CITY CLINIC CHANGE

SEARCH: ADVANCED

NAME DCN SSN

COLLAPSE ALL SYNC TREE

364.42 RUBEOSIS IRIDIS

ACTIONS

PLANS

EDUCATE FAMILY

RETEST

RETEST

PROGRAM SERVICES

ENROLLED PROGRAMS

12/6/2001 CHILI

5/4/2000 HEAD

ALL PROGRAMS

Action

ACTION INFORMATION	
EVENT PERFORMED	EDUCATE FAMILY
DATE REFERRED	12/7/2001
DATE DUE	12/8/2001
DATE COMPLETE	12/7/2001
RESULT	COMPLETE

COMMENTS
HERE IS WHERE ALL THE COMMENTS WILL APPEAR

Update

http://devont/prototypes/lead/client/Action.htm

Local intranet

Start My... Gr... Ma... Le...

8:29 AM

GIS – Geographic Information Systems

A Definition:

A collection of computer hardware, software, and geographic data for capturing, storing, updating, manipulating, analyzing, and displaying all forms of geographically referenced information.

(From *The ESRI Press Dictionary of GIS Terminology*)

Samples of Current GIS Usage

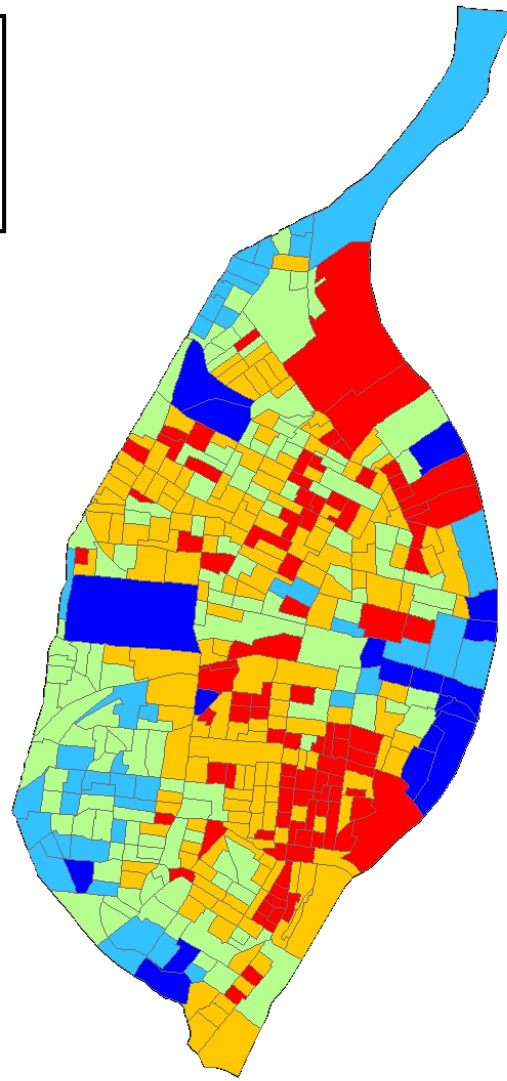
- Elevated blood lead in relation to environmental contributors
- Asthma - Emergency room admissions compared to daily ozone levels
- Population at risk in close proximity to top ten toxic release sources in the state

St. Louis City
Elevated Blood Lead Poisoning Risk
Utilizing Census 2000 data

Census 2000 Block Group
Assessed "Risk" for EBL

- Lowest Risk
-
-
-
- Highest Risk

If you have any questions contact:
Patty Osman - Office of Surveillance
Jason Smith - Office of Surveillance
(573) 751-9071

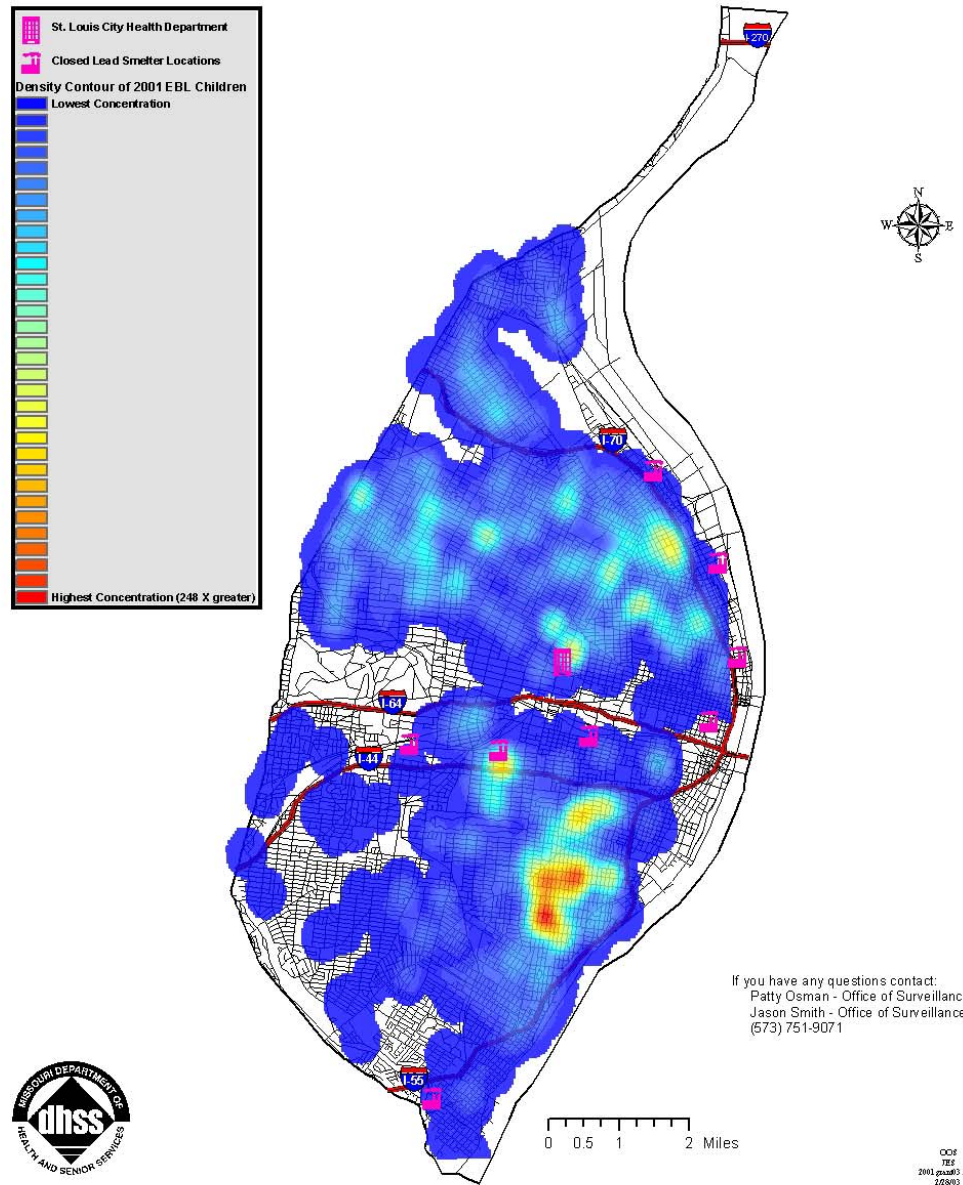


0 1 2 4 Miles



GIS
JMS
SERC BATTLES FOR THE
0/0000

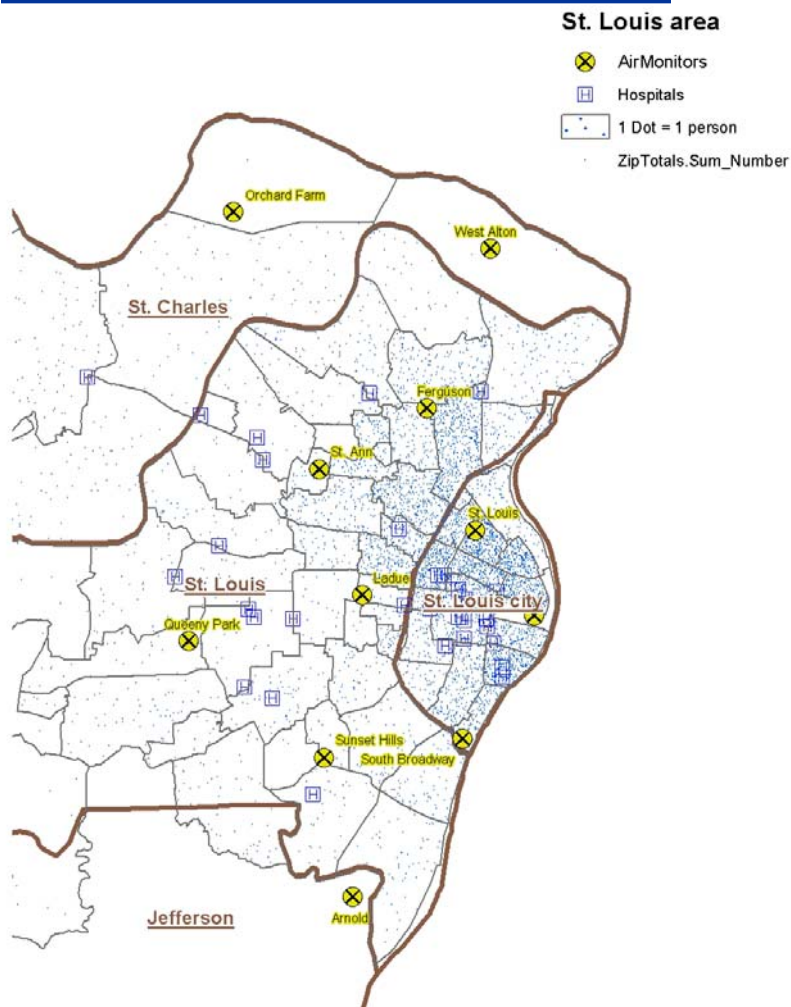
St. Louis City Elevated Blood Lead Child Distribution Spatial Density Analysis of 2001



Natural Resources and Hospital Emergency Room Data

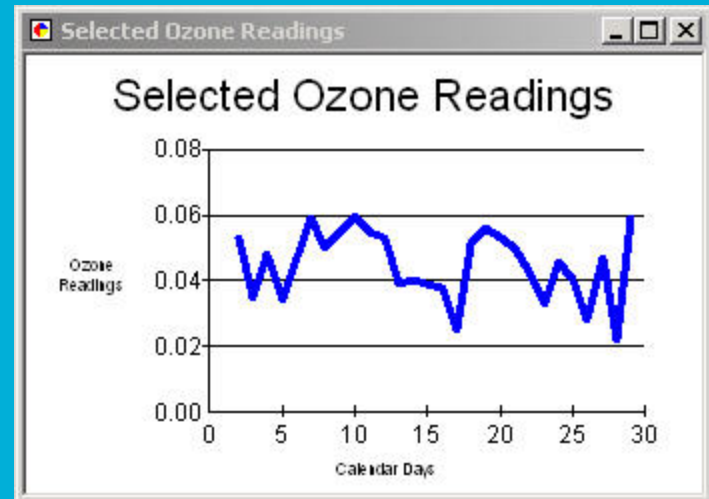
St. Louis Asthma

Number of Emergency room admissions



EXAMPLE

008
TMS
jan03asthma.mxd
2/9/2003

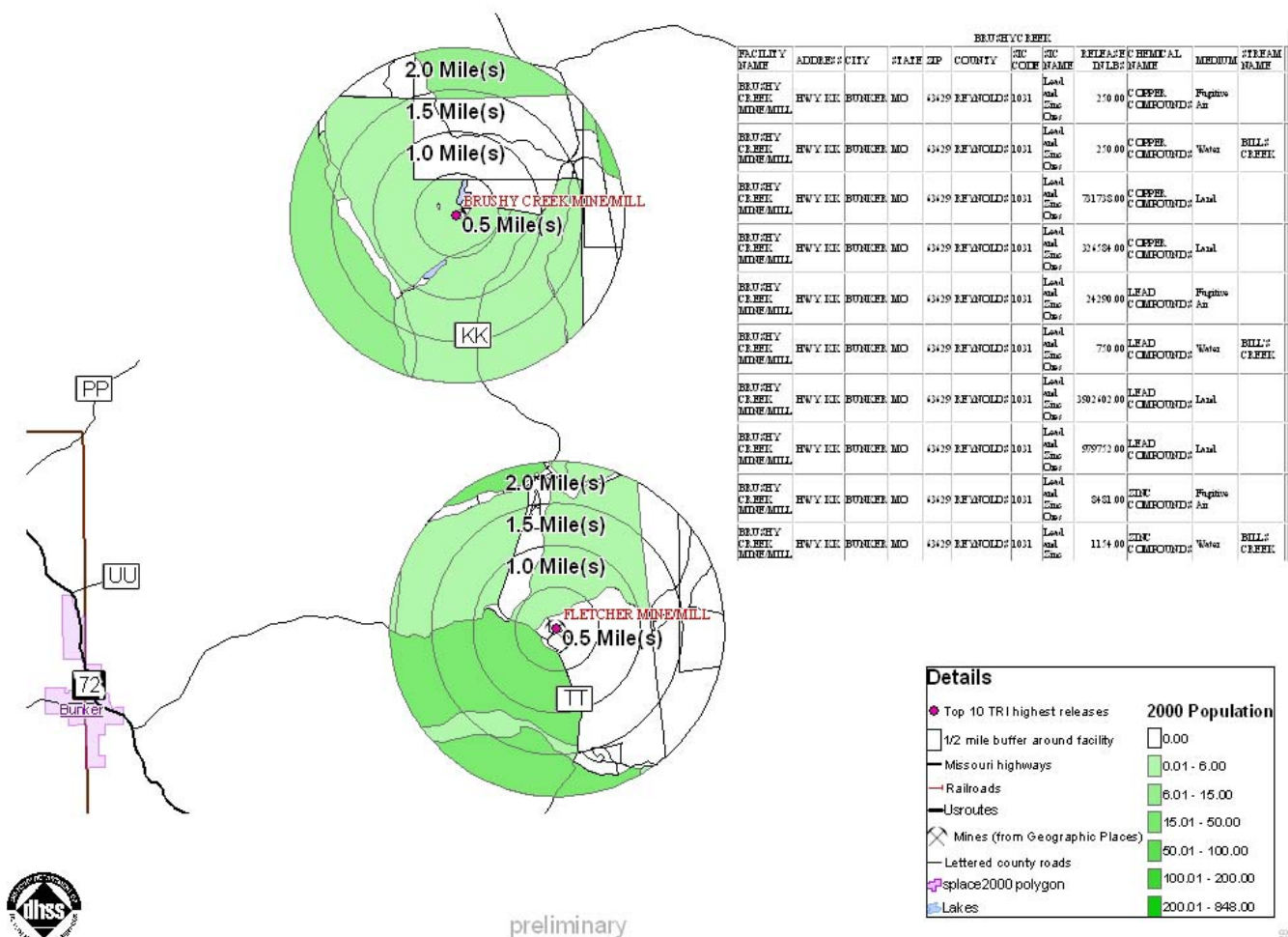


Emergency visits for asthma- related symptoms can be compared to the daily ozone levels in that area.

EPA

Toxic Release Inventory

Toxic Release Inventory - All Releases 2000

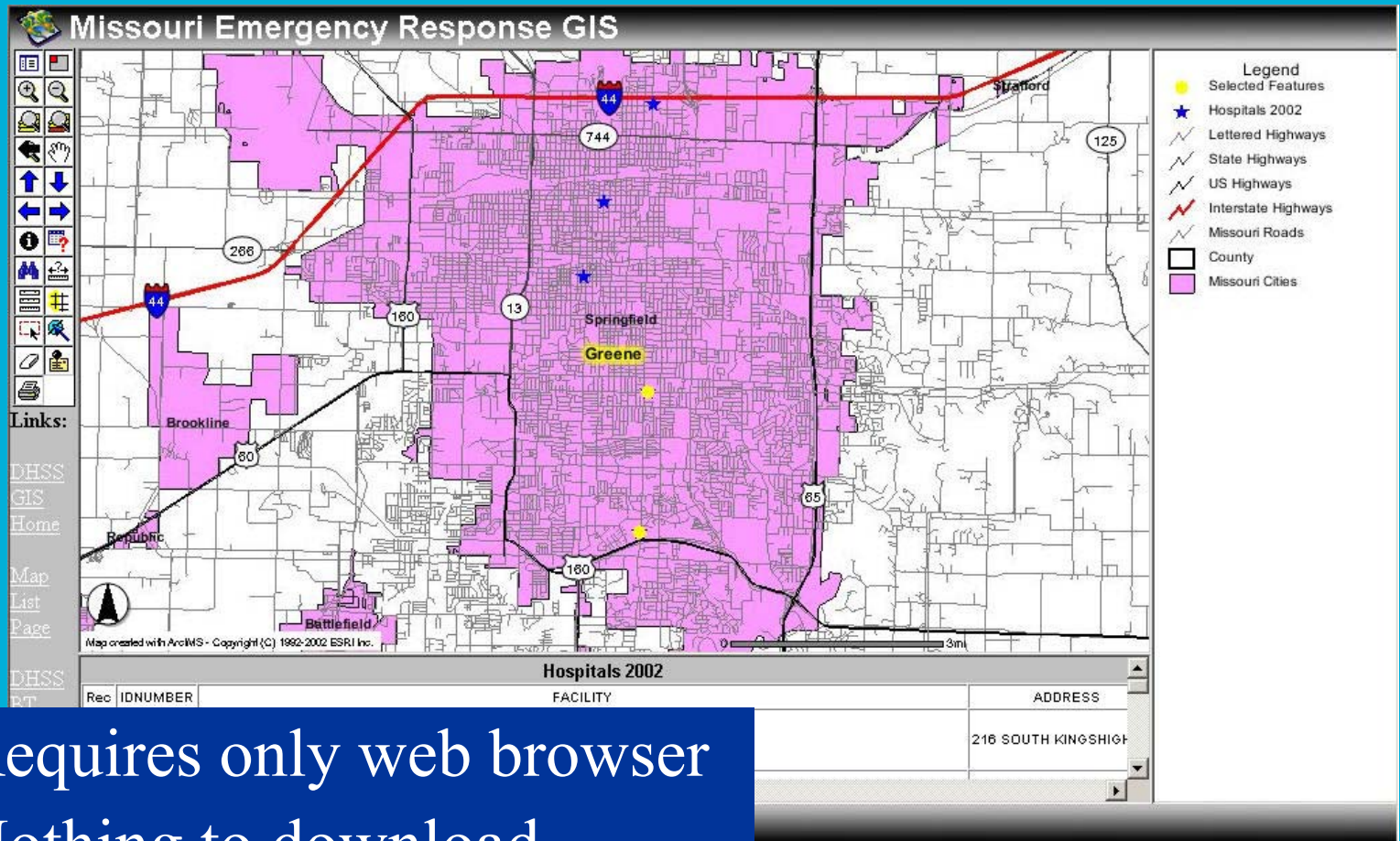


Demographic data can be compared to the EPA's toxic release inventory. GIS allows us to compare these data sets in their spatial context.

ArcIMS

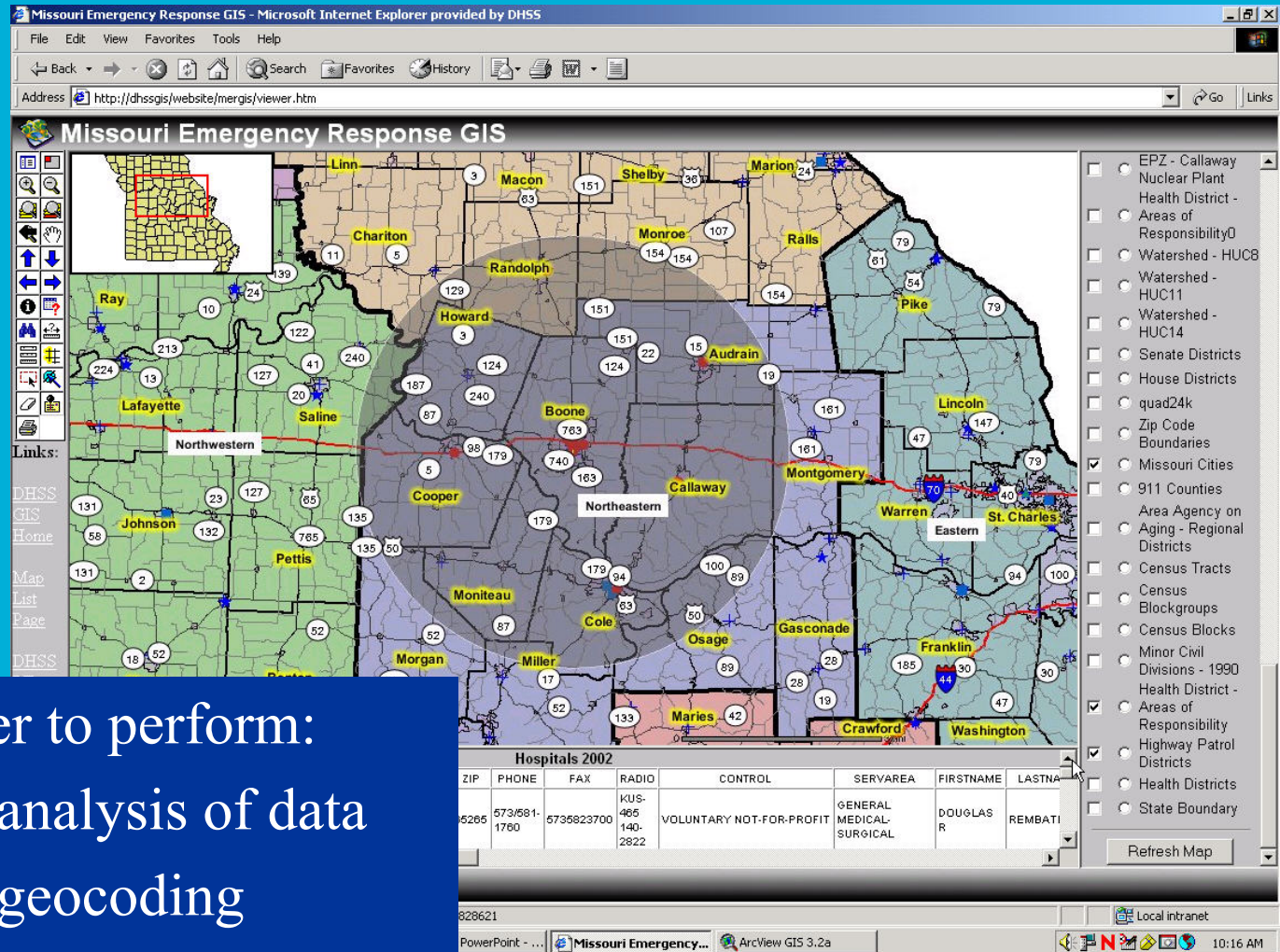
WEB-BASED INTERACTIVE MAPPING

ArcIMS



- Requires only web browser
- Nothing to download
- Requires no GIS skills

ArcIMS



Allows user to perform:

- Simple analysis of data
- Simple geocoding
- Printing basic maps

In Summary --

Establishment of working relationships with the Department of Natural Resources (DNR) has opened numerous doors to information and databases dealing with wide ranging components measurements of environmental information from lead to air to water.

The groundwork laid by the above relationship will allow further relationships to be established with other agencies such as EPA (in progress), Departments of Conservation and Agriculture, and other state and federal agencies as defined.